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A FOURTH CONTRIBUTION TO THE KNOWLEDGE OF NEOTROPICAL PLATYRHACID MILLIPEDS (DIPLOPODA: POLYDESMIDA)

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Introduction

Because of the striking appearance and the great size of many species, millipeds of the family Platyrhacidae have long attracted the attention of diplopodologists. Unfortunately, although 43 generic and about 250 specific names have been proposed in the family, published information on the group has so far been largely of a miscellaneous descriptive nature. Only Carl Attems has attempted to present an account of all the known species (1938), but despite its reference value, his treatment is at best a compilation and in no sense qualifies as a careful systematic study.

A large quantity of material is now available in various collections, but unfortunately these collections are scattered widely in Europe and North America. A thorough revision of the family remains to be undertaken by someone having the opportunity for extensive and leisurely travel. In the meantime, it is possible to clear up a number of isolated matters relating to nomenclature and systematics. I feel that the publication of three earlier papers (1953a–b, 1956)—all

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admittedly preliminary studies—serves a useful purpose in contributing to the taxonomic stability of the family, and now sufficient material has accumulated to justify yet another.

Most of the material upon which the following discussion is based is from the collection of the U.S. National Museum (USNM), made available to me through the kindness of Ralph E. Crabill and J. F. Gates Clarke. James A. G. Rehn kindly permitted me to study the holotype of *Platyrhacus atratus* at the Academy of Natural Sciences of Philadelphia (ANSP). My friend R. W. Lichtwardt of the Botany Department, University of Kansas, is due my heartiest thanks for his gift of the type specimen of the new *Nyssodesmus* herein described.

The existence of validated but unidentifiable names in the literature is a matter of much concern to systematists, and it is always gratifying to be able to dispose of such enigmas. Inasmuch as both genera and species of diplopods are based largely on male genitalia, and since this fact was not fully appreciated by most early workers, present-day students of the group find themselves with more than their share of distressing and often insoluble taxonomic problems. For example, 14 generic names have been proposed for American platyrhacids, including the typical genus of the family. The type species of only three of these genera were illustrated by their authors, and even these drawings were far from satisfactory. The resulting confusion can be imagined, particularly since most species of Diplopoda are still known only from the type specimens. Some workers dealing with platyrhacids made a bold effort to interpret the subtle (or meaningless) original diagnoses; some selected names arbitrarily; others gave up in despair and lumped all of the Neotropical species into one big catch-all genus; and at least one disdained the ancient tangle and merely proposed new generic names whenever the occasion seemed to require.

The difficulties that we have here are great; however, some progress is slowly being made. The following list includes the American generic names that have to be considered, with an indication of their current status:

Platyrhacus Koch (1847): Valid
Cyphorrhacus Cook (1896b): Unknown
Psammodesmus Cook (1896b): Valid
Barydesmus Cook (1896b): = *Platyrhacus*
Nyssodesmus Cook (1896b): Valid
Rhyphodesmus Cook (1896b): Valid
Nanorrhacus Cook (1896b): Valid
Tirodesmus Cook (1896b): ?Valid
Spilodesmus Cook (1896b): Unknown
Arcydesmus Cook (1896b): Unknown

Proaspis Loomis (1941): Uncertain
Aymaresmus Chamberlin (1941): Valid
Dynesmus Chamberlin (1941): ?= *Tirodesmus*
Ernostyx Chamberlin (1941): = *Psammodesmus*

Of the foregoing names, some have been stabilized recently by the examination of their type species or closely related ones. A few, such as *Nanorrhacus*, have been based upon fairly well described species. In the three earlier papers (1953a–b, 1956), I suggested an identification for *Platyrhacus* that seems to be well founded and established the synonymy of *Ernostyx* with the older *Psammodesmus*. It is now possible to consider three additional genera from the list, and, equally important, to dwell briefly upon the hitherto untouched subject of generic classification within the family.

Gonopod Morphology and Suprageneric Groupings

Since systematic groupings in the Diplopoda are based to such a large extent upon the structure of the gonopods, it would seem obligatory that these appendages be studied and illustrated in detail for each new species. Actually, however, some workers have proposed dozens of new forms without any illustrations whatever, or have provided only the most schematic and unsatisfactory drawings. Only within recent years have a few investigators become concerned with careful study of gonopod structure and the establishment of serial homologies throughout various generic groupings.

Although the American platyrhacids, so far as is known, are structurally rather similar in comparison to their more diverse counterparts in the Indo-Australian fauna, it is possible to detect morphological conditions in the form of the gonopods that undoubtedly reflect evolutionary divergencies on a suprageneric level. Of the genera treated in this paper, *Platyrhacus* and *Nyssodesmus* appear to be closely related and may be considered as belonging to a group in which the seminal groove proceeds along the coxal side of the telopodite, whereas the solenomerite originates from the adcoxal surface, the latter being reflected somewhat proximad by a slight torsion of the tibiotarsal region. The groove is thus directed transversely across the face of the telopodite in order to gain entry to the base of the solenomerite.

The gonopod in *Psammodesmus* departs radically from this arrangement in that the solenomerite is derived instead from the coxal face of the telopodite and thus in direct line with the normal course of the seminal groove (contrast the gonopods in figs. 1, *a* and *e*).

In the forms known to me there is nothing to suggest which of these two conditions may be the more specialized. It is possible that two primitive terminal processes became independently adapted to carry the seminal groove, and that the distal torsion of the telopodite in

Platyrhacus is a mechanical adaptation to bring the smaller and more delicate solenomerite into a position adjacent to the sternum of segment 6 where the solenomerite is shielded, in situ, by the larger and broader tibiotarsal element. In *Psammodesmus*, where the solenomerite is already on the inner edge of the telopodite, there is less necessity for such modification.

Divison of the Platyrhacidae into subfamilies has been essayed but once, in the very brief conspectus of Oriental forms by O. F. Cook (1896a). His subfamilies were based largely upon characters of body form and ornamentation, and were never recognized by later workers. Although a classification of the entire family on the basis of gonopod structure remains to be accomplished, it does not seem premature to recognize the affinities of various genera, when relationships are evident, by the proposal of tribal names, some of which may subsequently be elevated to the rank of subfamilies. A start in this direction is made with the two groupings of genera proposed in this paper.

Platyrhacini, new tribe

Composed of platyrhacid genera in which the gonopods are simple in form, the prefemur and femur forming a straight or nearly straight trunk at right angles to the coxite and without special processes; tibiotarsus represented by a thin laminate process directed or bent in the direction of the coxal axis, usually more or less twisted or bent slightly mesiad and shielding a small short solenomerite that originates from the edge of the telopodite away from the coxa. Seminal groove proceeding distad from its origin along the coxal side of the telopodite, thence crossing its mesial face to gain entry to the solenomerite.

This tribe includes four American genera, separable by the characters stipulated in the following key:

1. Tibiotarsus of gonopod directed distad in line with the median axis of the femur . . . . . **Tirodesmus** Cook
   Tibiotarsus of gonopod distinctly turned cephalomesiad at an angle of 30 to 90 degrees from the median axis of the femur, in the direction of the coxa . . 2
2. Lateral margins of paranota set off as distinct smooth rims, not produced into dentations; hypoproct rounded in outline . . **Aymaresmus** Chamberlin
   Lateral margins of paranota not set off, the upper surface continuous to the edge, which is usually provided with marginal dentations or large tubercules; hypoproct subtrapezoidal in outline 3
3. Distal third of telopodite bent toward the coxa at an angle of about 90 degrees . . . . . **Nyssodesmus** Cook
   Distal third of telepodite bent coxad at a much smaller angle, normally less than 45 degrees . . . . . **Platyrhacus** Koch

In addition to the gonopod character cited, *Tirodesmus* differs from the other genera by a peculiar formation of the paranota that may be only specific in value, yet has not been observed in any of the other

known species. The angulation of the telopodite contrasted in couplet 3 is much more pronounced than might be suggested by the illustrations.

Genus *Platyrhacus* Koch

Platyrhacus Koch, 1847, p. 58.—Hoffman, 1953a, p. 300; 1953b, p. 252; 1956, p. 46.
Barydesmus Cook, 1896b, p. 53 (orthotype: *Barydesmus kerri* Cook). New synonymy.

Barydesmus was very briefly diagnosed in the body of a synoptic key to American platyrhacoid genera, and the type species was not illustrated. The generic name therefore fell into disrepute and has remained a nomen inquirendum down to the present time. Fortunately, the original type specimen of *Barydesmus kerri* is located in the U.S. National Museum collection, and has been available for restudy. I am of the opinion that this type specimen belongs to the large genus of South American species that seems to include the type species of *Platyrhacus;* however, it is still not possible to state definitely that *B. kerri* is absolutely congeneric with *P. scaber* Koch.

Platyrhacus kerri (Cook), new combination

FIGURE 1*a, b*

Barydesmus kerri Cook, 1896b, p. 53.

Holotype, male, USNM 2380, Ecuador (further details of locality and collector not indicated).

REMARKS: I do not at this time venture a specific diagnosis for *P. kerri* since the characters of most of the known platyrhacids are as good as unknown. The type specimen is in good condition though discolored and perhaps somewhat telescoped from strong alcohol. It is about 89 mm. in length and 19 mm. in greatest width. The antennae are 11.6 mm. long. The second segment is wider than the collum and slightly wider than the third segment. The collum is nearly smooth, without anterior marginal tubercules or a postmarginal transverse groove. The tergites are smooth or at most finely coriaceous, with fine low tubercules evident upon drying. Lateral margins of paranota dentate with three to five subacute projections. On the caudalmost segments, the caudolateral apex of the paranota is drawn out into a short, acute, incurved point.

The gonopods, in situ, cross each other at about the midlength of the telopodite. The coxites are rather elongate, with three long macrosetae on the dorsal side, and with other vestiture lacking. From the mesial aspect, the telopodite is very slightly arcuate, curving somewhat cephalomesiad over the coxa. The solenomerite is short, slender, and a little sinuate; the tibiotarsus has a flattened lamina and is drawn out into an acute tip, with only the narrow dimension visible mesially.

The discovery of the long-misplaced type specimen of *P. kerri* creates some doubt about the validity of Silvestri's *Barydesmus tenebrosus*, also described as from Ecuador. The doubt cannot be settled, of course, until the type of the latter form is restudied, but the similarities of the two are striking.

Attems (1938, p. 234) placed *Platyrhacus fraternus* Carl in the synonymy of *tenebrosus*, but I believe without much justification, Carl's species was from Costa Rica and was well described; Attems. subsequent account was apparently based on specimens from the same country. But the original description of *tenebrosus* is not sufficiently detailed to form the basis of such a combination, particularly since species in *Platyrhacus* are often separable by a combination of small characters rather than by any one conspicuous feature. The geographical difference involved here also militates against the likelihood of specific identity.

***Platyrhacus acanthopleurus*, new species**

FIGURE 1*c*

Holotype, male, USNM 2535, Cauca Valley, Colombia, 3,000 ft. (date and collector not indicated).

DIAGNOSIS: A small species of *Platyrhacus*, dorsally bilineate, the lower pleural areas with numerous stout, acute tubercules in a compact field above the posterior leg pair; gonopods typical of the genus, the tibiotarsus drawn out into a fine point, without a terminal secondary dentation.

DESCRIPTION: Length, 62 mm.; greatest width, 12.0 mm. at the 12th metatergite.

Color pattern largely faded, most of dorsal surface now a dirty yellowish white; paranota brown, beset with numerous white tubercules; caudal edge of most tergites with a broad, transverse, dark brown band; middorsum with a light brown, median band extending from collum to epiproct, somewhat wider on prozonites (1.8 mm.) than on metazonites (1.5 mm.). Head, antennae, legs, and underparts yellowish gray except for brown caudal edges of the pleurites.

Head capsule strongly granulate except for the depressed and polished clypeal area. Interantennal ridges low and inconspicuous; subantennal ridges not developed. Subantennal swellings large, transverse, ovoid, tuberculate. Lower halves of genae depressed or flat, the lateral edges sinuate. Labral setae 8–8; clypeal 3–3, the outermost on each side remote from the other two; a pair of widely spaced frontal setae and a pair each of closer-set subantennal and vertigial setae; no interantennal setae or their sockets detected. Width of head across genae, 6.0 mm.

Antennae closely spaced (isthmus 1.5 mm. wide), rather long (9.0 mm.) and robust, reaching back to middle of third paranotum; articles clothed with long sparse setae; articles 2–5 subequal in size and shape; 6 longer, without evident distal sensory areas; 7 small, subconical, its distal margin inturned and separating the four sensory cones.

Collum rather small (7.1 mm. wide, 4.0 mm. long) and modified as follows: Anterior third of surface and most of the short, acutely triangular paranota nearly flat and smooth, without anterior marginal row of tubercules and postmarginal transverse furrow; posterior

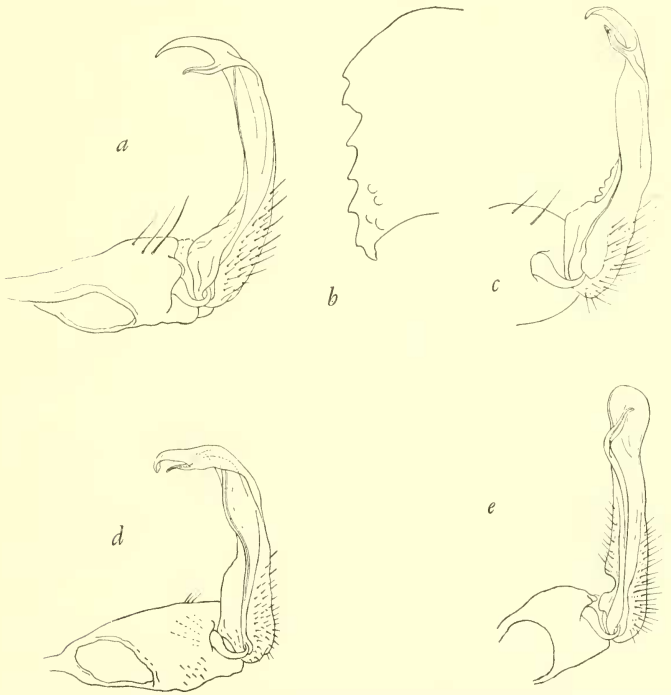

FIGURE 1.—*a, b, Platyrhacus kerri* (Cook): *a*, Mesial aspect of left gonopod of male holotype; *b*, outline of left paranotum of 18th tergite; *c*, *Platyrhacus acanthopleurus*, new species, mesial aspect of left gonopod of male holotype; *d*, *Nyssodesmus attemsi*, new species, mesial aspect of left gonopod of male holotype; *e*, *Psammodesmus atratus* (Chamberlin), mesial aspect of left gonopod of male holotype.

two-thirds (except for an oval median depression) strongly elevated to a high caudal margin that overhangs the following prozonite, the surface of the margin coriaceous-tuberculate, lacking transverse series of larger tubercules.

Following segments generally similar in shape and sculpture; the paranota of segments 2 and 3 swept forward and much wider (10.0–10.5 mm.) than collum, laterally each produced into two sharp spicules. Metazonites of segments 2–4 strongly produced above level of adjacent prozonites and provided with a posterior submarginal series of 14–16 small, flat, nearly contiguous, polished tubercules. Middorsum of these and following tergites nearly smooth; dorsum of paranota densely set with small ovoid tubercules. Anterior margin of paranota smooth and polished, terminating laterally in a sharp projecting spine; caudal margin with a row of small tubercules. Poriferous paranota with three or four lateral spines; the others normally with only three. Peritremata set at midlength of paranota, about one diameter from the lateral margin.

Caudad, the elevation of metatergites is less pronounced; the transverse row of tubercules less conspicuous; the tubercules widely spaced and usually 12 in number. Likewise the caudalmost two, lateral, paranotal teeth become closer together and carried increasingly caudad as the corners of the paranota is produced, finally creating the impression of a stout, slightly incurved, apically bifid spur. Middorsum of segment 19 nearly flat, finely granular. Epiproct robust, depressed, its margin forming a semicircle, with six marginal setiferous tubercules; upper surface coriaceous, with a median subterminal depression.

Anal valves nearly flat, each with an ovoid depression in the upper center and a distinct quadrate basal lobe overlapping on the produced lateral tips of the hypoproct. Mesial edges of valves not set off as raised margins, but differ in texture from the remainder of the valves in being smooth and polished instead of finely granular. Submarginal setiferous tubercules evenly spaced at one-third and two-thirds the length of the margin, the upper pair on the polished rim, the lower set slightly back onto the granular surface.

Hypoproct large, robust, subtrapezoidal; the distal edge somewhat trisinuate with a slightly developed median lobe between the convexities of the paramedian tubercules; basal margin swollen, strongly produced ventrad, overlapping and concealing midventral section of anal segment and in contact with that of segment 19. Laterally the hypoproct is produced into small triangular lappets providing fulcra for the basal lobes of the anal valves.

Prozonites and metazonites of most segments separated by a well-defined interzonal furrow, equally distinct around body but slightly

wider on the sides; prozonites uniformly finely granular; pleural areas of metazonites more coarsely granular and beset with numerous rounded to conical tubercules, those immediately above the legs hypertrophied into a field of large, prominent, acute denticles, spines, and bidentate cones, some exceeding caudal margin of segment. Stigmata large, swollen, followed on most segments by a similar appearing protuberance adjacent to the base of the posterior leg pair.

Sternal areas of metazonites produced into a high, abrupt platform (podosternum) accommodating the coxal sockets, with low, obtusely conical, caudolaterally directed knobs at the base of each leg; podosterna with median cruciform depressions entirely glabrous.

Legs long (up to 8.5 mm.), distal half of femora visible beyond paranota in dorsal aspect, the joints cylindrical, setose, in decreasing order of length 3–6–2–4–5–1. Tarsal claws long, slightly arcuate, slender, almost half as long as tarsi and fully as long as prefemora.

Sterna produced into small acute cones at the bases of legs 4–7, the sternum of segment 6 depressed and widened to accommodate tips of the gonopods.

Seminal lobes of second coxae hemispherical with a small distal median papilla.

Sternal aperture of segment 7 ovoid, with lateral and caudal raised rims, anteriorly transgressing only slightly into the prozonite. Gonopods rather small, slender, directed cephalad and parallel to each other. Coxites and telopodites of the form typical for the genus, apparently a little different in the form of the prefemur on the coxal side where it is broadened and produced into a slight knob. Femur long and slender, virtually parallel sided in mesial aspect, grading into a thin laminate tibiotarsus that is drawn out into an acute tip, the terminal third turned over somewhat mesiad. Solenomerite directed distad parallel to the tibiotarsus, gradually attenuated, very slightly sinuate.

Remarks: This species is described and named as new with some diffidence because of nearly a dozen inadequately documented specific names based on platyrhacids from the northern Andes in Columbia and Ecuador. As long as these names remain inquirendae, it certainly seems best to treat species from that region as new and give full descriptions, rather than cause a series of misidentifications by endeavoring to assign specimens to any of the doubtful existing names.

One known species rather closely approximates *Platyrhacus acanthopleurus*. This is one from Sao Paulo do Olivencia, on the Amazon River in western Brazil, which was identified by Attems (1938, p. 234) as *Polydesmus bilineatus* Lucas (1840). However, the creature originally described by Lucas was said to have come from "Mexico," and its description does not inspire much confidence in future recogni-

tion of the species. Although the chances that Attems' material is conspecific with the type specimen of *Polydesmus bilineatus* seem very slight, I refrain from suggesting a new name until the Brazilian species is restudied and compared with the considerable number of new species recently described by Chamberlin (1941) from the adjacent Department of Loreto, Peru.

According to Attems' description, the pleural spines of his species form a row along the caudal margin of the segments all the way from sterna to level of insertion of the paranota, in contrast to the strictly basal cluster in *Platyrhacus acanthopleurus*. There appear also to be differences in the shape of the gonopod prefemur, the position of the ozopores, and the development of transverse tuberculation. Probably a closer study of Attems' material will provide numerous other minor differences. I do not doubt that the two are closely related, but the great difference in localities alone virtually precludes their identity. I have been unable to reconcile *acanthopleurus* with any of the Peruvian species described by Chamberlin in 1941.

Genus *Nyssodesmus* Cook

Nyssodesmus Cook, 1896b, p. 53.—Hoffman, 1953b, p. 253.

Type species: *Nyssodesmus alboalatus* Cook, by original designation.

Range: Central America, from western Panama to Nicaragua.

Nyssodesmus was proposed as a new genus on the basis of a specimen from Nicaragua in which the male gonopods are "nearly straight for about two-thirds of their length, and are then bent toward the animal at nearly a right angle." In his summary of the millipeds of Central America Chamberlin (1922) described several additional species conforming to this general configuration, but also used the name *Nyssodesmus* to include species that are now considered to belong to *Platyrhacus*. Although Attems (1938) rejected *Nyssodesmus* as a nomen nudum, he substituted in its place the equally vague name *Tirodesmus*, which had been proposed in Cook's 1896b paper. Attems' concept of *Tirodesmus* embraced members of what I consider four valid genera as well as *Tirodesmus* in its strict sense (for *fimbriatus* Peters). The first subsequent proposal to resurrect *Nyssodesmus* as a valid genus as originally conceived by Cook was made in one of my earlier papers on *Platyrhacus* (1953b), in which I allocated the following names to the genus:

N. alboalatus Cook (1896b)
N. tristani Pocock (1909)
N. antius Chamberlin (1914)
N. mimus Chamberlin (1922)
N. bivirgatus Carl (1902)
N. limonensis Attems (1900)

This list unfortunately omitted two species, *N. nicaraguanus* and *N. nigricaudus*, both described by Chamberlin in 1922. Of the total of eight species now accounted for, a key to seven was published by Attems in 1938, omitting only the inadequately known *alboalatus*.

My friend and colleague R. W. Lichtwardt recently sent for identification a platyrhacid from Panama that he had examined for eccrinid fungi. This specimen represents an unnamed form of *Nyssodesmus*, probably a distinct species, which I dedicate to the memory of the distinguished myriapod specialist, Carl Graf Attems.

Nyssodesmus attemsi, new species

FIGURE 1*d*

Holotype, male, USNM 2468, Puerto Armulles, Panama, collected on August 5, 1952, by G. W. Martin.

DIAGNOSIS: A species of *Nyssodesmus* with obliterated dorsal tuberculation, and with the apex of the gonopod tibiotarsus squarely truncated instead of drawn out or rounded.

DESCRIPTION: Length, about 80 mm., greatest width, 13.5 mm.

Head capsule strongly sculptured; vertigial groove deep and distinct, interantennal ridges high and polished, terminating abruptly just above the first antennal article; subantennal ridges tuberculate to subcristate, subantennal swellings distinctly granular; lower half of genae vertically striate. Labral setae about 9–9, clypeal setae 3–3, the outermost on each side remote from the other two; a pair each of frontal, interantennal, and vertigial setae. Antennae rather long and slender, reaching back to third segment; articles 2–5 subequal in size, clavate, cylindrical; 6 longer and less clavate; 2 not exceeding apex of genae.

Collum broadly subhexagonal, the anterior and posterior margins subparallel across body, abruptly converging laterad to an acute angle; surface of collum roughly granular with an elevated ridge across the front edge and a slightly depressed area on each side of the middle toward the lateral ends. Caudal margin with four or five indistinct low tubercules; anterior margin without traces of tuberculation.

Tergites of segments 2–4 subsimilar in shape, much broader than collum, their paranota directed cephalad, with an anterior marginal ridge and with three or four low indistinct lateral marginal tubercules. Surface of paranota roughly granular, surface of middorsum coriaceous. The following segments with broader paranota that are more nearly transverse; in going caudally the anterior margins are increasingly swept back, the lateral teeth increase to five or six, and the caudolateral angle increases to form a distinct produced and incurved spine on segments 15–17. Simultaneously, the dorsal sculpture diminishes

until the entire dorsum is merely coriaceous to smooth. Peritremata moderate in size, set near the center of the paranota, about five times the diameter from the lateral margin and four times the diameter from the caudal margin. Paranota of segment 19 large, oblong lobes, slightly divergent, extending back to middle of epiproct. Latter large and robust, nearly parallel sided, with the caudal margin slightly convex, the dorsal tubercules pronounced.

Anal valves nearly flat and granular, with two setiferous tubercules on each, the uppermost of which is in contact with the mesial marginal ridge of the valve. Preanal scale (hypoproct) large and inflated, strongly overhanging ventral margin of anal segment, distally produced into two high, conical paramedian tubercules.

Ventral sides of paranota and pleural areas finely granulate, smooth. Podosternites strongly elevated and produced conically near the base of each leg. Basal leg joints nearly glabrous, the distal-most rather densely setose; the joints in decreasing order of length 3–6–2–5–4–1; tarsal claw rather small, straight, polished. Legs 4–7 with a rather high and acute conical sternal process at the base of each; the coxae with a small field of large bristles adjacent to each of these knobs.

Coxae of gonopods rather large, the surface smooth but for three short macrosetae on the dorsal side and a small field of a dozen or so short bristles on the mesial face. Telepodite basally short and straight, slightly constricted just proximad of the midlength, thereafter broadening again; the distal third bent over the coxite forming a right angle with the rest of the telopodite; solenomerite moderately long and sinuate; apex of tibiotarsus drawn out somewhat but distinctly truncate and itself bent at nearly a right angle.

Remarks: On the basis of gonopod structure, *Nyssodesmus attemsi* seems most closely related to *N. tristani* and *N. antius*, and in fact the three forms may eventually prove to be only geographic races of a single species. It differs from these two congeners, as well as from the others, in having the dorsal tuberculation best developed anteriorly, the caudalmost segments becoming virtually smooth. The type specimen, unfortunately, is completely discolored from the preservative, so that we have no idea what the color pattern in life might be.

This is the first species of *Nyssodesmus* to be recorded from Panama, most of the other species occurring in Costa Rica. Presumably the genus is a fairly recent segregate from the original *Platyrhacus* stock that crossed the Panamanian Isthmus and that is still represented in Costa Rica and Panama by several species.

Psammodesmini, new tribe

The genus upon which this group is founded differs from other Neotropical platyrhacids in the relationship of the terminal gonopod elements. The tibiotarsal blade is thin and laminate, but is directed either continuously distad in line with the femur or is bent in the direction away from the coxa. The solenomerite is derived from the coxal side of the telopodite and in direct line with the course of the seminal groove, but is bent adcoxally parallel to the direction taken by the tibiotarsus.

The tribe includes only the single genus *Psammodesmus* Cook.

Genus *Psammodesmus* Cook

Psammodesmus Cook, 1896b, p. 53.—Hoffman, 1953a, p. 301.

Type: *Psammodesmus cos* Cook, by original designation.

Range: Cordilleran Region of northwestern South America, from northeastern Peru to the Isthmus of Panama.

This generic name was revived in one of my recent papers (1953a), which endeavored to account for all of the known species apparently referable to it. However, the valid claims were overlooked of *Platyrrhacus atratus* Chamberlin, which was described in 1947 from specimens taken in southwestern Colombia. The locality alone should have drawn attention to the form as a possible representative of *Psammodesmus*. Although the formation of the gonopod telopodite reflects differences of at least tribal value between the genera *Platyrhacus* and *Psammodesmus*, the structure cannot be clearly observed unless the gonopod is examined from the mesial aspect. *Psammodesmus atratus*, as illustrated in the original description, could not therefore be referred to either of these genera. To correct this shortcoming, a drawing (fig. 1*e*) made from the holotype is provided herewith for comparison with those given in one of my earlier papers (1953a).

Psammodesmus atratus (Chamberlin), new combination

FIGURE 1*e*

Platyrrhacus atratus Chamberlin, 1947, p. 34, fig. 12 (type data given as holotype, male, ANSP 9958, 300 miles up the Atrato River, Colombia).

This species is the largest now known in *Psammodesmus;* it has a maximum width of about 13 mm., whereas the other forms range from 7 to 11 mm. wide. In most other characters, however, it agrees well with them. The ozopores are removed from the lateral margin by a distance of about four times the diameter of a peritreme; none of the paranota are indented or incised adjacent to the pore as in

P. moyobambus (Chamberlin). To be particularly noticed in the figure is the pronounced indentation of the inner margin of the telopodite, just above the coxal articulation. A similar peculiarity is likewise to be seen in *P. schmitti* and *P. moyobambus*, and may prove to be a constant generic character.

Although Chamberlin described the type as being uniformly brown dorsally, I was able to discern traces of two light paramedian dorsal stripes. In my key to species (1953a, p. 304), *P. atratus* runs out readily to *P. fasciolatus* (Silvestri), which, as implied by its name, has a similar color pattern. *P. atratus* differs from its congener chiefly in the shape of the tibiotarsus of the gonopod and its somewhat larger size. Judged from the similarities of the two, and from the geographic proximity of their type localities, the relationship will probably be found to be a subspecific one.

It should be noted in passing that the original binomial combination *Platyrrhacus atratus* as used by Chamberlin is preoccupied in the Diplopoda. Attems (1900) transferred the species named by Pocock (1897) as *Polydesmorhachis atratus* into the genus *Platyrrhacus*, the resulting combination existing in the literature for more than a decade. Those who suppress junior secondary homonyms may wish to rename Chamberlin's Colombian species, but my personal preference is to disregard instances of transient combinations resulting from the arbitrary and often ill-advised shifting of names from one genus to another.

Psammodesmus schmitti Loomis and Hoffman

Psammodesmus schmitti Loomis and Hoffman, *in* Hoffman, 1953a, p. 301, figs. 1–4 (type data given as holotype male, USNM 2016, Port Obaldia, Panama).

This species was described from specimens taken at Port Obaldia on the Atlantic Coast, and Cana in the interior of Darién, both localities being very close to the Panama-Colombia boundary. An additional specimen is at hand from a third locality, the upper Pequene River just east of the Canal Zone, collected on March 25, 1907, by A. H. Jennings (USNM). This specimen extends the range of the species over 100 miles westward along the Isthmus.

The gonopods of the specimen match those of the types very closely. Although considerably bleached by the alcohol, the specimen retains enough pigmentation to indicate that the color pattern consisted of a pair of oblique light paramedian stripes on each tergite, each stripe being directed caudolaterad and probably creating the impression in life of a strongly serrated longitudinal light stripe down each side of the dorsum, on the base of the paranota.

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